Institut for Matematik og Datalogi
Syddansk Universitet

March 14, 2019
JFB

On-Line Algorithms – F19 – Lecture 9

Lecture, March 12

We finished Chapter 7, skipping most proofs. We covered the statements of the theorems in Chapter 8, up through section 8.3.2, but no proofs. We did Example 8.4. (In discussion section on March 13, we did Example 8.5.)

Lecture, March 18

We will finish chapter 8 and then begin on "The relative worst order ratio applied to paging", by J. Boyar, L.M. Favrholdt, and K.S. Larsen, in *Journal of Computer and System Sciences*, volume 73, pages 817–843, 2007. You get this through the electronic journals SDU's library has (using the link on the course's homepage). In section 2, we will initially only consider definitions 1 and 2 and skip the others. Next we will cover up through Corollary 3 of section 4, and then section 6. Note that the slides are available through the course homepage.

Lecture, March 20

We will continue with the paper on the relative worst order ratio applied to paging. If we get further than the order mentioned above, we will cover the definitions for relatedness and weakly comparable in section 2 and Theorem 7 of section 5 next.

Problems for March 19

1. Problems that we didn't finish on March 13. Note that we finished the case where $q \leq n/4$ of part (a) of the problem on Dual Bin Packing. We also covered Example 8.5 from the textbook.

2. Compare MTF and TRANS for the list processing problem, using the relative worst order ratio.

3. How would you define a "strict relative worst order ratio"?

4. Show that the relative worst order ratio is transitive, so if A is at least as good as B and B is at least as good as C, then A is at least as good as C.

5. Using relative worst order analysis, compare First-Fit and Next-Fit for the classical bin packing problem (trying to minimize the number of bins used). Next-Fit is the algorithm that only keeps one bin open at a time. If the current item fits there, Next-Fit places it there. Otherwise, it closes the bin (never considering it again) and opens a new bin.